INVESTIGATOR'S ANNUAL REPORT

National Park Service

All or some of the information provided may be available to the public

Reporting Year: 1993	**Park:** Shenandoah NP
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Additional investigators or key field assistants (first name, last name, office phone, office email):

No co-investigators

Permit#:
SHEN1993AGQE

Park-assigned Study Id. #:
unknown

Project Title:
Electron Probe Microanalysis of in Situ Aluminum and Calcium in Fish Gill Epithelium Exposed to Environmental Acidity

Permit Start Date: Jan 01, 1998	**Permit Expiration Date** Jan 01, 1998
Study Start Date: Jan 01, 1993	**Study End Date** Jan 01, 1994

Study Status:
Completed

Activity Type:
Other

Subject/Discipline:
Air Quality

Objectives:
The main objective is to use the technique of electron probe microanalysis to identify, localize, and quantify aluminum present in gill tissue of blacknose dace as a result of episodic environmental acid and aluminum exposure.

Findings and Status:
No significant findings to report as yet. Initial spectra do show consistent results between samples, which indicates successful sample preparation and probe techniques. Only the last sample date, 12/5 showed a streamflow above baseline, however, preliminary EPMA results indicate no aluminum present in the gill tissue. This fact is not entirely unexpected as the sampling occurred approximately five hours after the precipitation ended, and accumulation in the area was less than 1".;Even with no true experimental data to report, the study is importan and novel as it is the first to use the technique of cryofixation and cryoultramicrotomy to prepare fish gill tissue for EPMA. Although the presence of aluminum on the cell membrane and in the cytoplasm detected by EPMA has been documented (see proposal for references), the tissue was prepared using the technique of chemical fixation which causes elemental loss. Gill tissue samples are ideally suited for the cryofixation techniques, giving excellent results in freezing quality. Because the sample preparation has become routine, the study will be easily continued and hopefully completed in 1994.

For this study, were one or more specimens collected and removed from the park but not destroyed during analyses?
No

Funding provided this reporting year by NPS: 0	**Funding provided this reporting year by other sources:** 300

Fill out the following ONLY IF the National Park Service supported this project in this reporting year by providing money to a university or college

Full name of college or university:	**Annual funding provided by NPS to university or college this reporting year:**

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